

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION MEXATION OPERATION OPERATION AND CTANDAPTU3AUMORGANISATION INTERNATIONALE DE NORMALISATION

Meat and meat products – Determination of nitrate content (Reference method)

Viandes et produits à base de viande – Détermination de la teneur en nitrates (Méthode de référence)

First edition - 1975-09-01

UDC 637.5 : 546.175

Ref. No. ISO 3091-1975 (E)

Descriptors : meat, meat products, chemical analysis, determination of content, nitrates.

FOREWORD

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Draft International Standards adopted by the price Committees are circulated to the Member Bodies for approval before their acceptance as International Standards by the ISO Council. S

International Standard ISO 3091 was drawn up 🐼 Technical Committee ISO/TC 34, Agricultural food products, and circulated to the Member Bodies in May 1974.

It has been approved by the Member Bodies of the following countries

Australia Austria Bulgaria Czechoslovakia Denmark Egypt, Arab Rep. of Ethiopia France

Germany Hungary India Ireland Israel Netherlands Poland Romania

South A Rep. of Spain Thailand Turkey United Kingdon U.S.S.R. Yugoslavia

nent Copy The Member Body of the following country expressed disapproval of the document on technical grounds :

Canada

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Printed in Switzerland

Meat and meat products – Determination of nitrate content (Reference method)



This International Standar precifies a reference method for the determination of the intrate content of meat and meat products.

2 REFERENCES

ISO 2918, Meat and meat products – Determination of nitrite content (Reference method).

ISO 3100, Meat and meat products - Samplin

3 DEFINITION

nitrate content of meat and meat products : The nitrate content determined according to the procedure described in this International Standard and expressed as milligrams of potassium nitrate per kilogram (parts per million).

4 PRINCIPLE

Extraction of a test portion with hot water, precipitation of the proteins and filtration.

Reduction of the extracted nitrates to nitrite by metallic cadmium. Development of a red colour by addition of sulphanilamide and N-1-naphthylethylenediamine dihydrochloride to the filtrate and photometric measurement at a wavelength of 538 nm.

5 REAGENTS

All reagents shall be of analytical quality. The water used shall be distilled water or water of at least equivalent purity.

5.1 Zinc rods, length about 15 cm and diameter 5 to 7 mm.

5.2 Solutions for precipitation of proteins

5.2.1 Reagent I

Dissolve 106 g of potassium ferrocyanide trihydrate $[K_4Fe(CN)_6.3H_2O]$ in water and dilute to 1 000 ml.

5.2.2 Reagent II

Dissolve 220 g of zinc acetate dihydrate $[Zn(CH_3COO)_2.2H_2O]$ and 30 ml of glacial acetic acid in water and dilute to 1 000 ml.

5.2.3 Borax solution, saturated

Dissolve 50 g of disodium tetraborate decahydrate (Na₂B₄O₇.10H₂O) in 1 000 ml of tepid water and cool to room temperature.

5.3 Cadmium sulphate solution, 30 g/l.

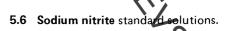
Dissolve 37 g of cadmium sulphate $(3CdSO_4.8H_2O)$ in water and dilute to 1 000 ml.

5.4 Hydrochloric acid solution, about 0,1 N.

Dilute 8 ml of concentrated hydrochloric acid solution (1,19 g/ml) to 1 000 ml with water.

5.5 Amonia buffer solution, pH 9,6 to 9,7.

Dilute 20 nl of concentrated hydrochloric acid (ρ_{20} 1,19 g/ml with 500 ml of water. After mixing, add 10 g of ethylerediamine tetra-acetic acid disodium-salt dihydrate, [CH₂N(CH₂COOH)CH₂COONa]₂·2H₂O, and 55 ml of concentrated ammonia (ρ_{20} 0,88 g/ml). Dilute to 1 000 ml with water and mix. Check the pH.



Dissolve 1,000 g of sodium whrite $(NaNO_2)$ in water and dilute to 100 ml in a one-mark volumetric flask. Pipette 5 ml of the solution into a 1 000 ml one-mark volumetric flask. Dilute to the mark.

Prepare a series of standard solutions by pipetting 5 ml, 10 ml and 20 ml of this solution into 100 ml one-mark volumetric flasks and diluting to the mark with water. These standard solutions contain respectively $2,5 \mu g$, $5,0 \mu g$ and $10,0 \mu g$ of sodium nitrite per millilitre.

The standard solutions and the dilute (0,05 g/l) sodium nitrite solution from which they are prepared shall be made up on the day of use.